



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/603,428	06/24/2003	Bo Shen	200208570-1	4318
7590 05/07/2012 HEWLETT-PACKARD DEVELOPMENT COMPANY Intellectual Property Administration P.O. Box 272400 Fort Collins, CO 80527-2400				
EXAMINER				
FINDLEY, CHRISTOPHER G				
ART UNIT		PAPER NUMBER		
2482				
MAIL DATE		DELIVERY MODE		
05/07/2012		PAPER		

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

**Office Action Summary****Application No.**

10/603,428

**Applicant(s)**

SHEN, BO

**Examiner**

CHRISTOPHER FINDLEY

**Art Unit**

2482

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 22 December 2011.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on \_\_\_\_; the restriction requirement and election have been incorporated into this action.
- 4) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 5) ☒ Claim(s) 1-27 is/are pending in the application.
- 5a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 6) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 7) ☒ Claim(s) 1-27 is/are rejected.
- 8) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 9) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 10) ☐ The specification is objected to by the Examiner.
- 11) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 12) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-893)  
Paper No(s)/Mail Date \_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_

## DETAILED ACTION

### *Response to Arguments*

1. Applicant's arguments filed 12/22/2011 have been fully considered but they are not persuasive.
2. Re claims 1, 10, and 19, the Applicant contends that the prior art cited fails to teach or suggest caching an intermediate result from one of the stages of a multi-stage service, said result selected according to said available processing and memory resources. However, the Examiner respectfully disagrees. As previously noted, Fig. 2 of Lin shows buffers 44 storing an intermediate result of a bit rate converter before being sent through a scheduler. Furthermore, Lin discloses that the intermediate result to be stored in the buffer is selected according to both available memory (Lin: column 4, lines 34-49) and processing resources (Lin: column 7, lines 49-53).

### *Claim Rejections - 35 USC § 102*

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. **Claims 1-7, 10-16, and 19-25 are rejected under 35 U.S.C. 102(e) as being anticipated by Liu et al. (US 7292602 B1, hereinafter referred to as "Liu").**

Re **claim 1**, Liu discloses a computer implemented method for servicing streaming media comprising: receiving, at a computer system, said streaming media (Liu: Fig. 3, step 102, bit streams received); determining, at said computer system, an allocation of available processing and memory resources (Liu: Fig. 3, step 104, available channel bandwidth determined with respect to minimum requirements); performing, at said computer system, a multi-stage service on said streaming media (Liu: column 6, line 63-column 7, line 15, when necessary a bit rate converter apparatus transcodes video data

Art Unit: 2482

in one or more of the incoming bitstreams); and caching, at said computer system, an intermediate result from one of the stages of said multi-stage process, said result selected according to said available processing and memory resources (Liu: Fig. 2, the bit rate converter 34 feeds into buffers 44, thereby storing the intermediate result before the streams are scheduled for transmission; column 4, lines 34-49, result to be stored in the buffer is selected according to available memory; column 7, lines 49-53, result to be stored in the buffer is selected according to available processing resources).

**Re claim 2**, Liu discloses that said service is a computing-intensive media services (Liu: column 12, lines 5-29, transcoding such as bit rate conversion may be performed, wherein bit rate alteration may include computing-intensive procedures such as partial decoding, re-quantization, and VLC encoding).

**Re claim 3**, Liu discloses that said resources are selected from the group consisting of a transcoder, a first cache, and a second cache (Liu: column 6, line 63-column 7, line 15, when necessary a bit rate converter apparatus transcodes video data in one or more of the incoming bitstreams; Fig. 2, the bit rate converter 34 feeds into multiple buffers 44).

**Re claim 4**, Liu discloses that said service comprises transcoding functions (Liu: column 12, lines 5-29, transcoding such as bit rate conversion may be performed).

**Re claim 5**, Liu discloses that said result is a final transcoding result (Liu: column 6, line 63-column 7, line 15, when necessary a bit rate converter apparatus transcodes video data in one or more of the incoming bitstreams; Fig. 2, the bit rate converter 34 feeds into buffers 44, thereby storing the transcoding result before the streams are scheduled for transmission).

**Re claim 6**, Liu discloses that said transcoding functions are selected from the group consisting of frame rate reduction, bit rate reduction and resolution reduction (Liu: column 12, lines 5-29, transcoding such as bit rate conversion may be performed, wherein bit rate alteration may include computing-intensive procedures such as partial decoding, re-quantization, and VLC encoding as well as resolution reduction).

**Re claim 7**, Liu discloses that said caching comprises caching intermediate transcoding results of an output stream of said streaming media provided a target bit rate of said output stream of said streaming media is greater than a data caching rate of said streaming media (Liu: column 9, line 65-

Art Unit: 2482

column 10, line 4, downstream decoder buffer levels are modeled so that a bandwidth arbitrator may be configured to maintain buffer occupancy at particular levels).

**Claim 10** recites the corresponding computer readable medium thereon stored a computer program directed to steps for executing the method of claim 1 and, therefore, has been analyzed and rejected with respect to claim 1 above.

**Claim 11** has been analyzed and rejected with respect to claim 2 above.

**Claim 12** has been analyzed and rejected with respect to claim 3 above.

**Claim 13** has been analyzed and rejected with respect to claim 4 above.

**Claim 14** has been analyzed and rejected with respect to claim 5 above.

**Claim 15** has been analyzed and rejected with respect to claim 6 above.

**Claim 16** has been analyzed and rejected with respect to claim 7 above.

**Claim 19** recites the corresponding apparatus for implementing the method of claim 1 and, therefore, has been analyzed and rejected with respect to claim 1 above.

**Claim 20** has been analyzed and rejected with respect to claim 2 above.

**Claim 21** has been analyzed and rejected with respect to claim 3 above.

Re **claim 22**, Liu discloses that said intermediate transcoding result is selected from any of the respective stages of said multi-stage service (Liu: column 3, lines 7-11, available bandwidth determined before or after transcoding; column 12, lines 13-17, bit rate alteration may occur on compressed video data, uncompressed video data, or at any partial compression status therebetween).

Re **claim 23**, Liu discloses that said result is selected to optimize the balance of processing and memory resources used in providing said service (Liu: column 2, lines 51-67).

**Claim 24** has been analyzed and rejected with respect to claim 6 above.

**Claim 25** has been analyzed and rejected with respect to claim 7 above.

***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. **Claims 8, 9, 17, 18, 26, and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Liu et al. (US 7292602 B1) in view of Yoo et al. (US 699512 B2, hereinafter referred to as "Yoo").**

Re **claim 8**, Liu does not specifically disclose that said intermediate transcoding results comprise meta data that is selected from the group consisting of pixel, block, macroblock, picture and sequence. However, Yoo discloses a transcoding method and apparatus, wherein intermediate transcoding results comprise meta data that is selected from the group consisting of block (Yoo: Fig. 4, block 412), macroblock (Yoo: Fig. 4, block 410), picture (Yoo: Fig. 4, block 406) and sequence (Yoo: Fig. 4, block 402). Yoo further discloses partially decoding a macroblock MB to the DCT domain (Yoo: Fig. 4, block 412), thus indicating pixel data is processed.

Since both Yoo and Liu relate to transcoding digital video bitstreams, one of ordinary skill in the art at the time of the invention would have found it obvious to combine the network adaptation capabilities of Liu with the transcoding system of Yoo in order to provide a transmission system capable of handling multiple incoming streams and minimizing rate reduction by efficiently allocating available bandwidth among the multiple incoming streams (Liu: column 2, lines 45-67).

Re **claim 9**, Liu does not specifically disclose that said transcoding functions are performed by resources selected from the group that consist of motion vector generator, bit rate controller and parser. However, Yoo discloses that transcoding functions are performed by resources selected from the group that consist of bit rate controller (Yoo: Fig. 4, block 420 "bit\_rate") and parser (Yoo: Fig. 4, blocks 402,404, 406,408,410, and 412), and a motion vector generator (Yoo: Fig. 4, blocks 410 and 426, MV parsed from MB header; column 6, lines 59-62, MV is generated).

Since both Yoo and Liu relate to transcoding digital video bitstreams, one of ordinary skill in the art at the time of the invention would have found it obvious to combine the network adaptation capabilities of Liu with the transcoding system of Yoo in order to provide a transmission system capable of handling multiple incoming streams and minimizing rate reduction by efficiently allocating available bandwidth among the multiple incoming streams (Liu: column 2, lines 45-67).

**Claim 17** has been analyzed and rejected with respect to claim 8 above.

**Claim 18** has been analyzed and rejected with respect to claim 9 above.

**Claim 26** has been analyzed and rejected with respect to claim 8 above.

**Claim 27** has been analyzed and rejected with respect to claim 9 above.

### ***Conclusion***

7. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

### ***Contact***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to CHRISTOPHER FINDLEY whose telephone number is (571)270-1199. The examiner can normally be reached on Monday-Friday (8:30 AM-5:00 PM).

Art Unit: 2482

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Christopher Kelley can be reached on 571-272-7331. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Christopher Findley/

/Dave Czekaj/  
Supervisory Patent Examiner, Art Unit 2487